

AMENDMENTS TO THE CLAIMS

Please cancel claims 45 and 61 without prejudice to pursue them in related application(s), rewrite claim 62 in independent form, amend claims 1, 18, 21, 31, 39, 47, 49, 54, and 63, and insert new claim 64, as follow. A complete listing of the current pending claims is provided below.

1. (Currently Amended) A radiation method, comprising:
illuminating an object with a first beam at a first energy level;
determining a first image of the object formed by the first beam;
determining configuration data using the first image;
illuminating the object with a second beam at a second energy level;
determining a second image of the object formed by the second beam;
determining radiation absorption data using the second image; and
determining a radiation treatment plan using the configuration data and the radiation absorption data, wherein the radiation treatment plan is determined before or during a treatment session; and
storing or executing the radiation treatment plan.
2. (Original) The method of claim 1, wherein the first energy level is a keV energy level, and the second energy level is a MeV energy level.
3. (Original) The method of claim 1, wherein the first beam and the second beam have low intensities.
4. (Original) The method of claim 1, wherein the first beam has an intensity between approximately 1 Rad and 20 Rad, and the second beam has an intensity between approximately 250 Rad and 1000 Rad.
5. (Original) The method of claim 1, wherein the second beam has a constant intensity during a session.

6. (Original) The method of claim 1, further comprising adjusting an intensity of the second beam during a session.
7. (Original) The method of claim 1, wherein the illuminating the object with the first beam and the illuminating the object with the second beam are performed in alternating pulses.
8. (Original) The method of claim 1, wherein the illuminating the object with the first beam and the illuminating the object with the second beam are performed sequentially.
9. (Previously Presented) The method of claim 1, wherein the determining configuration data comprises comparing data associated with the first image with data regarding configuration of the object.
10. (Original) The method of claim 1, wherein the determining radiation absorption data comprises calculating a radiation absorption rate in the object.
11. (Original) The method of claim 1, further comprising storing the configuration data and the radiation absorption data in a computer readable medium.
12. (Original) The method of claim 1, wherein the configuration data comprises one or a combination of location, size, and shape of the object.
13. (Original) The method of claim 1, wherein the radiation treatment plan is configured for use in a computed cone therapy.
14. (Previously Presented) A radiation system, comprising:
means for generating a first beam at a first energy level for illuminating an object;
means for determining a first image of the object formed by the first beam;
means for determining configuration data using the first image;

means for generating a second beam at a second energy level for illuminating the object;
means for determining a second image of the object formed by the second beam;
means for determining radiation absorption data using the second image; and
means for determining a radiation treatment plan using the configuration data and the
radiation absorption data;
wherein the means for determining the radiation treatment plan determines the radiation
treatment plan before or during a treatment session.

15. (Previously Presented) The system of claim 14, wherein the means for determining
configuration data comprises means for comparing data associated with the first image with data
regarding configuration of the object.

16. (Original) The system of claim 14, wherein the means for determining radiation
absorption data comprises means for calculating a radiation absorption rate in the object.

17. (Original) The system of claim 14, further comprising means for storing the configuration
data and the radiation absorption data.

18. (Currently Amended) A radiation method, comprising:
illuminating an object with a beam at a MeV energy level;
determining an image of the object formed by the beam;
determining configuration data and radiation absorption data using the image; **and**
determining a radiation treatment plan based on the configuration data and the radiation
absorption data; **and**
storing or executing the radiation treatment plan.

19. (Original) The method of claim 18, wherein the beam has a constant intensity during a
session.

20. (Previously Presented) A radiation method, comprising:

illuminating an object with a beam at a MeV energy level;
determining an image of the object formed by the beam;
determining configuration data and radiation absorption data using the image;
determining a radiation treatment plan based on the configuration data and the radiation absorption data; and
adjusting an intensity of the beam during a session.

21. (Currently Amended) A radiation method, comprising:
illuminating an object with a beam at a MeV energy level;
determining an image of the object formed by the beam;
determining configuration data and radiation absorption data using the image; and
determining a radiation treatment plan based on the configuration data and the radiation absorption data, wherein the determining configuration data comprises comparing data associated with the image with data regarding configuration of the object specified in a treatment prescription; and
storing or executing the radiation treatment plan.

22. (Original) The method of claim 18, wherein the determining radiation absorption data comprises calculating a radiation absorption rate in the object.

23. (Original) The method of claim 18, further comprising storing the configuration data and the radiation absorption data in a computer readable medium.

24. (Original) The method of claim 18, wherein the configuration data comprises one or a combination of location, size, and shape of the object.

25. (Original) The method of claim 18, wherein the radiation treatment plan is configured for use in a computed cone therapy.

26. (Original) A radiation system, comprising:

means for generating a beam at a MeV energy level for illuminating an object;
means for determining an image of the object formed by the beam;
means for determining configuration data and radiation absorption data using the image;
and
means for determining a radiation treatment plan using the configuration data and the radiation absorption data.

27. (Previously Presented) A radiation system, comprising:
means for generating a beam at a MeV energy level for illuminating an object;
means for determining an image of the object formed by the beam;
means for determining configuration data and radiation absorption data using the image;
means for determining a radiation treatment plan using the configuration data and the radiation absorption data; and
means for adjusting an intensity of the beam during a session.

28. (Previously Presented) A radiation system, comprising:
means for generating a beam at a MeV energy level for illuminating an object;
means for determining an image of the object formed by the beam;
means for determining configuration data and radiation absorption data using the image;
and
means for determining a radiation treatment plan using the configuration data and the radiation absorption data;
wherein the means for determining configuration data comprises means for comparing data associated with the image with data regarding configuration of the object specified in a treatment prescription.

29. (Original) The system of claim 26, wherein the means for determining radiation absorption data comprises means for calculating a radiation absorption rate in the object.

30. (Original) The system of claim 26, further comprising means for storing the configuration data and the radiation absorption data.

31. (Currently Amended) A radiation process, comprising:
illuminating an object with a radiation beam at a MeV energy level;
determining an image of the object formed by the radiation beam;
determining radiation absorption data using the image; ~~and~~
determining a treatment plan based at least in part on the determined radiation absorption data; wherein the treatment plan is determined after the object is illuminated with the radiation beam; and
storing or executing the treatment plan.

32. (Canceled).

33. (Previously Presented) The process of claim 37, wherein the adjusting comprises one or a combination of changing a direction, a shape, and an intensity of the treatment beam.

34. (Original) The process of claim 31, further comprising determining configuration data for the object.

35. (Original) The process of claim 34, wherein the determining the configuration data comprises
illuminating the object with an image beam;
determining an image formed by the image beam; and
determining the configuration data using the image formed by the image beam.

36. (Previously Presented) The process of claim 34, wherein the treatment plan is determined based on the configuration data.

37. (Previously Presented) The process of claim 34, further comprising generating a treatment beam, and adjusting the treatment beam based on the configuration data.

38. (Previously Presented) The process of claim 34, further comprising gating delivery of radiation based on the configuration data.

39. (Currently Amended) A radiation process, comprising:
illuminating an object with a radiation beam at a MeV energy level;
determining an image of the object formed by the radiation beam;
determining radiation absorption data using the image; and
determining a treatment plan based at least in part on the determined radiation absorption data, wherein the treatment plan is determined after the object is illuminated with the radiation beam; and
verifying the treatment plan before illuminating the object with a treatment beam; and
storing or executing the treatment plan.

40. (Canceled)

41. (Canceled)

42. (Previously Presented) A radiation system, comprising:
means for generating a radiation beam at a MeV energy level for illuminating an object;
means for determining an image of the object formed by the radiation beam;
means for determining radiation absorption data using the image; and
means for determining a treatment plan based at least in part on the determined radiation absorption data;
wherein the means for determining the treatment plan is configured to determine the treatment plan after the object has been illuminated by the radiation beam.

43. (Original) The system of claim 42, further comprising means for determining configuration data for the object.

44. (Previously Presented) The system of claim 43, further comprising means for gating a delivery of radiation based on the configuration data.

45. (Canceled)

46. (Previously Presented) An apparatus for irradiating an object, comprising:
a platform for supporting an object;
a first beam source configured to generate a first radiation beam at a first intensity level and a second radiation beam at a second intensity level toward the platform;
a beam adjuster in front of the first beam source for adjusting a radiation beam directed from the first beam source, the beam adjuster comprising a multi-leaf collimator;
a projection detector configured to generate a first image of the object illuminated by the first radiation beam at the first intensity level;
a control module coupled to the projection detector and to the beam adjuster; and
a second beam source configured to generate an image beam toward the platform, wherein the projection detector is further configured to generate a second image of the object illuminated by the image beam.

47. (Currently Amended) The apparatus of claim 4562, wherein the control module is configured to develop a radiation treatment plan based on the first image.

48. (Original) The apparatus of claim 46, wherein the control module is configured to develop a radiation treatment plan based on one or both of the first image and the second image.

49. (Currently Amended) The apparatus of claim 4562, wherein the control module is configured to adjust one or a combination of a shape, an intensity, and a direction of the second radiation beam.

50-53. (Canceled)

54. (Currently Amended) The apparatus of claim 45 62, wherein the first image is usable in determining a treatment plan.

55. (Previously Presented) The method of claim 1, wherein the determining the treatment plan comprises creating the treatment plan.

56. (Previously Presented) The method of claim 1, wherein the determining the treatment plan comprises modifying the treatment plan.

57. (Previously Presented) The method of claim 14, wherein the means for determining the treatment plan comprises means for creating the treatment plan.

58. (Previously Presented) The method of claim 14, wherein the means for determining the treatment plan comprises means for modifying the treatment plan.

59. (Previously Presented) The radiation method of claim 1, wherein the treatment session is a first treatment session.

60. (Previously Presented) The radiation system of claim 14, wherein the treatment session is a first treatment session.

61. (Canceled)

62. (Currently Amended) The apparatus of claim 45, An apparatus for irradiating an object, comprising:

a platform for supporting an object;

a first beam source configured to generate a first radiation beam at a first intensity level and a second radiation beam at a second intensity level toward the platform;

a beam adjuster in front of the first beam source for adjusting a radiation beam directed from the first beam source, the beam adjuster comprising a multi-leaf collimator;

a projection detector configured to generate a first image of the object illuminated by the first radiation beam at the first intensity level; and

a control module coupled to the projection detector and to the beam adjuster, wherein the control module is configured to control the beam adjuster to cover at least a portion of a body, and wherein the at least a portion comprises a part of a target region.

63. (Currently Amended) The apparatus of claim 45-62, wherein the control module is configured to control the beam adjuster based on data from the projection detector.

64. (New) The apparatus of claim 62, wherein the target region comprises tissue that is to be treated.